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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,161	11/21/2001	Walter G. Birdsell	H0657/7003/REH	3862

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EXAMINER	
DAHBOUR, FADI H	
ART UNIT	**PAPER NUMBER**
3743	

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/991,161	BIRDSELL ET AL.	
	Examiner	Art Unit	
	Fadi H. Dahbour	3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-35 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6,9-11,18-24,26-29,31,32,34 and 35 is/are rejected.

7)☒ Claim(s) 7,8,12-17,25,30 and 33 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 17 May 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 32 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 32 recites the limitation "first" in line 2. There is insufficient antecedent basis for this limitation in the claim. Also, regarding claim 34, at line 9, after the word "parallel" should be inserted –to said fluid pathway--. Corrections are required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 9-11, 20, 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Chung-Tai ('763).

Chung-Tai discloses a heating element (Figs.1-3) comprising a first heat sink (10 of Figs.1-3) having at least one opening (11, 12 of Figs.1-3) wherein a fluid pathway is formed through the first heat sink (Figs.1-3), at least one PTC element thermally coupled to the first heat sink and having a current direction (20 of Figs.1-3), wherein the at least one PTC element is substantially aligned such that the current direction is

substantially parallel to the fluid pathway (Fig.3), wherein the first heat sink includes thermally conductive material (see "good...heat conductivity" in lines 60-61 of col.1) and is positioned such that the at least one PTC element (20 of Figs.1-3) transmits heat to the first heat sink (10 of Figs.1-3), further comprising a second heat sink attached to the first heat sink (10, 10 of Figs.1-3), wherein the first and second heat sinks include electrically conductive material (see "good electric...conductivity" in lines 60-61 of col.1), and the at least one PTC element electrically contacts both the first and second heat sinks (20 of Figs.1-3), wherein the first and second heat sinks are configured to carry an electric supply (see "each...10 is connected with a terminal" in lines 67-68 of col.1, also see "they can be connected to terminals" in line 36 of col.1) to and from the at least one PTC element (see "electric current passing through the PTC" in line 64 of col.2), further comprising fasteners which attach the first heat sink to the second heat sink (Fig.1) and electrically isolate the first heat sink from the second heat sink (see "are electrically isolated from each other" in lines 2-3 of col.2), wherein the fasteners (Fig.1) are located and configured to generate pressure between the first and second heat sinks and the at least one PTC element (Figs.2-3), a plurality of PTC elements (20 of Figs.1-3) arranged such that broad surfaces of the plurality of PTC elements are aligned in a plane substantially perpendicular to the fluid pathway (Fig.3), and arranged so that a largest surface of the PTC element is approximately perpendicular to the fluid pathway (Fig.3), wherein the fluid pathway first passes one of the heat sink and the at least one PCT element and then passes the other of the heat sink and the at least one PCT element (Fig.3).

5. Claims 1, 4-6, 21, 22-24, 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Sarto.

Sarto discloses a heating element (Figs.1-4), comprising a first heat sink (76, 78 of Figs.4-5) having at least one opening (72 of Fig.4), wherein a fluid pathway is formed through the first heat sink (see "permit flow" in line 66 of col.3), at least one PTC element thermally coupled to the first heat sink and having a current direction (see "positive temperature coefficient" in lines 68 of col.3 through line 1 of col.4; also see 74 of Figs.4-5, also see "current will flow through" in line 4 of col.4), wherein the at least one PTC element is substantially aligned such that the current direction is substantially parallel to the fluid pathway (Figs.4-5), wherein the at least one PTC element (74 of Figs.5) is substantially shielded from the fluid pathway (76, 78 of Fig.5), wherein the at least one PTC element has a surface area (Fig.4) and the fluid pathway is adjacent to less than 50% of the surface area of the at least one PTC element (Fig.4), wherein the first heat sink includes solid portions aligned over the at least one PTC element such that the solid portions of the first heat sink substantially shield the at least one PTC element from being in the fluid pathway (76, 78 of Fig.5), wherein the heating element is sized to fit a portable space heater (Figs.4-5), and further comprising a housing (Fig.1), and an air circulator which generates a fluid flow that is directed substantially through the fluid pathway (see "an air horn or inlet portion 20...the throttle blade 22 operates to regulate the flow quantity of...air through the main passage 26...air mixture from passage 26... flows directly to the heater...the mixture passes through the grid heater" in lines 2-6 of col.3, and in lines 38-39 of col.4, and in lines 2-3 of col.5: also see Fig.1),

wherein the first heat sink includes thermally conductive material such that the at least one PTC element transmits heat to the first heat sink (see "metallic" in line 10 of col.4; also see 76, 78 of Figs.4-5), wherein the at least one PTC element has a surface area and the first heat sink defines the fluid pathway adjacent to less than 50% of the surface area of the at least one PTC element (Fig.4), wherein the first heat sink includes electrically conductive material (see "electrical connections to" in lines 12-13 of col.4), the at least one PTC element electrically contacts the first heat sink (Fig.5), the first heat sink is configured to carry an electric supply at least one of to and from the at least one PTC element (see "electrical connections to" in lines 12-13 of col.4; also see Figure 5), a first heat sink having at least one opening formed through the heat sink wherein a fluid pathway is formed through the first heat sink (Fig.4), a PTC element (74 of Fig.5) thermally coupled to the first heat sink and positioned substantially out of the fluid pathway (76, 78 of Fig.5), and so that a largest surface area of the PTC element is approximately perpendicular to the fluid pathway (Fig.4), wherein the first heat sink includes a thermally conductive material (see "metallic" in line 10 of col.4), such that the PTC element transfers heat to the first heat sink (Fig.5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung-Tai ('763) in view of Wang (US4855570).

Chung-Tai, as described above, discloses all the features claimed except at least one of copper, stainless steel, and steel. Wang discloses copper (see "copper" in line 51 of col.2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the copper, as taught by Wang, in the device of Chung-Tai, because Wang teaches that it would serve to provide the property of electrical conductivity (see "electric conductive" in line 50 of col.2 of Wang).

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sarto in view of Wang (US4855570).

Sarto, as described above, discloses all the features claimed except at least one of copper, stainless steel, and steel. Wang discloses copper (see "copper" in line 51 of col.2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the copper, as taught by Wang, in the device of Sarto, because Wang teaches that it would serve to provide the property of electrical conductivity (see "electric conductive" in line 50 of col.2 of Wang).

9. Claims 18, 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung-Tai ('763).

Chung-Tai, as described above, discloses all the features claimed except the PTC element transferring at least 80% of its heat output to the heat sinks. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the PTC element transferring at least 80% of its heat output to the heat sinks,

because Chung-Tai teaches that "the better the heat dissipating coefficient of a PTC heater is, the higher its effectiveness is" (see lines 10-11 of col.1 of Chung-Tai), and also because Chung-Tai teaches that it is desirable for "the heat produced by the PTC thermistor elements and to radiate it away from the PTC thermistor as much as possible" (see lines 13-16 of col.1 of Chung-Tai).

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sarto.

Sarto, as described above, discloses all the features claimed except the PTC element being rectangular shaped. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the PTC element being rectangular shaped, because it would allow it to be used inside of applications having rectangular shaped fluid paths.

Allowable Subject Matter

11. Claim 34 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

12. Claims 7-8, 12-17, 25, 30, 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chung-Tai ('070), Anderson et al ('399) and Anderson et al ('146) are cited to show heating elements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fadi H. Dahbour whose telephone number is 703-306-5479. The examiner can normally be reached on M-F, 9am-5:30pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry A. Bennett, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fadi H. Dahbour
Examiner
Art Unit 3743